

1.3 MEGAPIXEL CMOS IMAGE SENSORS ZR32112MLC (MONO) & ZR32112PLC (RGB)

Solutions on a Chip

ZR32112 Product Brief

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Benefits Overview

This high-performance 1.3 Megapixel CMOS image sensor is ideal for digital still and video imaging products. With its "Distributed-Pixel Amplifier" design, the pixel response is independent of its distance from each column's CDS circuitry. This unique architecture results in an extremely uniform pixel array with low "fixed-pattern noise" without the need for off-chip "background frame subtraction" circuitry. The bank of analog front-end circuits digitize each pixel to 10-bit resolution. This highly parallel approach eases speed requirements on individual analog circuits and reduces overall power consumption.

Separate programmable red, green, and blue PGA circuitry enables analog-domain color balance. The flexibility of the ZR32112 output image format permits the tradeoff between resolution, bit depth, and frame rate. The image output may also be horizontally "mirrored" and vertically "flipped".

This device is available in both monochrome (no filters) and color (RGB Bayer mosaic filter + microlenses). Both versions are also available in an "enhanced quality" industrial grade.

Features

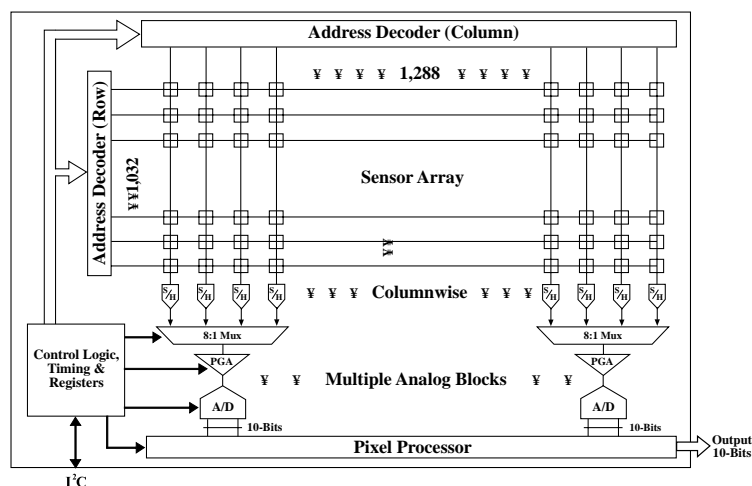
- Replaces CCD, Vdriver, T.G., and AFE chips
- No "dark-frame subtraction" required
- Analog domain RGB color balance
- High-resolution still or motion video
- High-quality 10-bit digital image performance
- Programmable exposure control
- Movable and sizable output window
- Left-right and up-down scan flip mode
- Red pixel start option in any direction
- Decimation by 2 or 4 subsampling
- 4 pixel border for full frame 5x5 convolution
- 8 "optical black" pixel header and trailer for color sensors
- Standard I²C bus control interface
- Low-power consumption from 3.3 volt supply
- Enables resolution, frame rate, and bit depth tradeoff

Applications

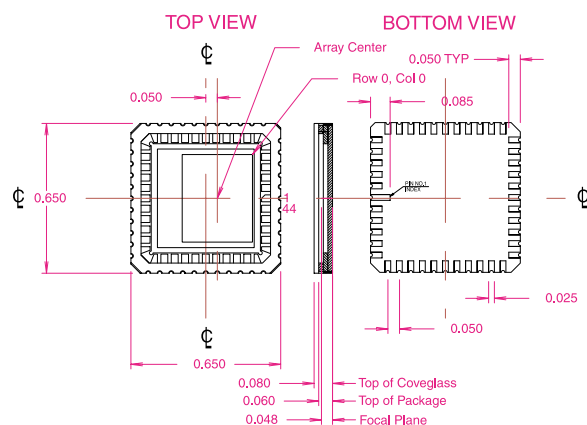
- Digital still cameras
- Surveillance and security cameras
- Biometrics and document imaging
- Machine vision and robotics
- Medical and dental imaging
- Mobile consumer appliances
- Video conferencing systems

Key Specifications

Part Number	ZR932112MLC	ZR932112PLC
Color MosaicType	none (monochrome)	RGB Bayer with microlenses
Active Resolution	1288 x 1032 colored pixels	
Array Size	12.3mm diagonal	
Pixel Pitch	7.5 microns x 7.5 microns	
Black Ref. Pixels	8 columns of optical-black pixels on both left and right of active array color device	
Max. Pixel Clock	16 MHz (10 bit output)	
Digital Output	10 bits, 3mA drive current per pin	
Dynamic Range	66 dB S/N ratio into Programmable Gain Amplifier stage	
Saturation	1 Volt	
Sensitivity	4.0 Volts / Lux-sec. at 5500K on monochrome sensor w/ CM500 IR filter	
Exposure Range	1/10,000 seconds to 0.1 seconds	
Random Noise	Less than 1/2 LSB	
Video Scan Mode	"rolling snap" shuttering with 1 linetime delay to start of next line	
Stillframe Capture	full array reset and integration with readout when shutter is closed	
Output Window	Location within 2 pixels, size within 8 pixels, any aspect ratio	
Sub-Sampling	Contiguous (1:1); or skip one RGGGB "set" of pixels (1:2); or skip three RGGGB "sets" of pixels (1:4)	
Scan Direction	Left to Right or Right to Left, Top to Bottom or Bottom to Top	
PGA Gains (R,G,B)	6-20dB, 6 bits	
Control Bus	I ² C @ 400KHz	
Voltage Supply	3.3VDC +/- 10%	
Power Dissipation	250mW @ maximum 10 bit clock rate	
Chip Package	44 LCC, 0.050 inch pitch, 0.650" x 0.650" x 0.080"	

ZR32112

Package Diagram



Ordering Information

	Consumer Grade	Industrial Grade
Monochrome	ZR32112MLC-3	ZR32112MLC-2
RGB Color	ZR32112PLC-3	ZR32112PLC-2

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